

ON A COLLECTION OF CRANE-FLIES (TIPULIDAE DIPTERA) FROM THE FIJI ISLANDS.

By CHARLES PAUL ALEXANDER, Ithaca, N. Y.*

The following crane-flies were included in material sent to Mr. Harry H. Knight by Dr. James F. Illingworth. The only published reference to the Tipulid fauna of these islands is included in Skuses Diptera of Australia (vol. IV, 2nd series, 1889) and his records are mentioned herewith. I am indebted to Dr. Illingworth and Mr. Knight for this material. The types are in the collection of the author.

Family **Tipulidae**. Subfamily **Limnobiinae**. Tribe **Limnobiini**.

Dicranomyia saltens Doleschall.

1857 *Limnobia saltens* Doleschall; Nat. Tijd. Ned. Ind., vol. 14, p. 390, pl. 2, fig. 3.

Two, a male and a female, from Nadi on July 27. This seems to be the most easterly station so far made known for this species; it has been recorded from southern India, Java, the Philippine Islands, etc.

Dicranomyia illingworthi, sp. n.

Wings hyaline with sparse brown markings; Sc short ending just beyond the origin of Rs.

Male, length, 4.6 --5 mm.; wing, 5.2 --6.8 mm.

Male: Rostrum and palpi brown. Antennæ dark brown, the flagellar segments globular in shape. Head dark brown.

Thorax rather uniformly dark brown, stripes on the praescutum not well-defined, lobes of the scutum a little darker. Pleuræ uniform brown. Halteres pale, stem moderate in length. Legs, coxæ light brown, trochanters brown. Wings hyaline, veins brown; a small rounded brown stigmal spot; pale seams at Sc₂, base of Rs and on the cross-veins and deflections of veins along the cord and outer end of cell 1st M₂. Venation: (See fig. 1.) Sc short, ending just beyond the origin of Rs. Basal deflection of Cu₁ before the fork of M.

Abdominal tergites slightly darkened, the sternites pale, the abdomen rather transparent. Hypopygium with the pleurites short, cylindrical; dorsal appendage chitinized short, slightly curved and acute at apex; ventral appendage large, pale, almost white, with the outline rounded, the inner lobe produced mesad into a cylindrical, feebly chitinized, point that bears two bristles which are directed caudad. (See fig. 7.)

*Contribution from the Entomological Laboratory of Cornell University.

Holotype, ♂, Nadi, Fiji Is., 7-28, 13. Paratypes, 4 ♂s, with the type.

Libnotes strigivena Walker.

Limnobia strigivena Walker, Journ. Linn. Soc. Lond., V, 229, 1861.

This species is recorded by Skuse (Diptera of Australia, Proc. Linn. Soc. N. S. Wales, IV, series 2nd, 787, 1889).

Tribe **Antochini.**

Teucholabis fijiensis, sp. n.

Head dark; thorax with three brown stripes, pleuræ spotted with brown; wings yellowish with brown spots.

Male, length, 7 mm.; wing, 7.4 mm.

Male: Rostrum brown, palpi dark brown. Antennæ with the basal segments of the flagellum rounded, brown. Eyes large, contiguous on the vertex; head dark greyish black.

Pronotal scutum dull yellow, brown medially above; a brown spot on the lateral end. Mesonotal praescutum light yellow with three stripes of which the median one is longest and broadest, extending from the cephalic margin to the transverse suture. The lateral stripes are short and narrow, behind, crossing the transverse suture and ending on the anterior border of the scutal lobes; the lateral margin of the sclerite is suffused with dark brown. Scutum and scutellum brown except the median portion of the former which is pale. Postnotum dark brown. Pleuræ dull yellow, the episternites of the pro- and mesothoraces brown. Halteres pale. Legs, coxæ, fore and middle, brown, hinder pair paler; trochanters pale yellow; femora yellowish brown with a broad brown subapical ring; tibiæ and tarsi brown. Wings yellowish, stigmal spot large, prominent, a small seam on Sc₂; seams at the base of Rs, along the cord and on the outer end of cell 1st M₂. Venation: (See fig. 2.) cross-vein r at the tip of the long R₁ and so placed slightly beyond the middle of R₂₊₃.

Abdominal tergites dark brown, the caudal margin a little more yellowish; the basal two or three sternites yellowish, the others more brown. Hypopygium with the ninth tergite having the caudal margin rounded and very feebly notched medially. Pleuræ short, clothed with sparse long hairs. Dorsal appendage of the pleurite jointed at the base, pale, clothed with numerous long hairs at the base, at the tip slightly bifid underneath. The ventral appendage is a long elongation of the pleura, not jointed at its base, darker and more chitinized; toward the tip it is constricted, the actual apex expanded and bearing a few small hairs. (See fig. 8).

Holotype, ♂, Nadi, Fiji Is., 7-28, '13.

Tribe Eriopterini.

Gonomyia (Leiponeura) fijiensis, sp. n.

Thorax brown, lateral margin of the praescutum yellow; wings with the costal margin yellow, the membrane light brown and hyaline diversified, stigma lacking.

Male, length, 4.9 mm. Female, length, 4.8-5.1 mm.; wing, 4.3-4.4 mm.

Male: Rostrum and palpi dark brown. Antennae light sulphur yellow, the flagellar segments a little paler. The head bright sulphur yellow with three pale brown marks, a median one on the frontal tubercle and others on the sides of the vertex.

Pronotum light yellow. Mesonotal praescutum dark clove-brown the lateral margin between the pseudosuture and the transverse suture yellow, scutum, scutellum and postnotum dark brown. Pleurae light yellow, a broad brown lateral stripe, deepest ventrally fading into the yellow of the dorsal pleurites above, extending from the ventral surface of the cervical sclerites through the halteres to the posterior portion of the mesonotal postnotum; the area between this stripe and the praescutum is light yellow suffused with brown near this stripe; sternites dark brown. Halteres light sulphur-yellow. Legs, fore coxae light sulphur-yellow except the extreme tip which is dark brown; trochanters light brown; remaining coxae dark brown on the basal half, paler brown apically and on the trochanters; remainder of the legs broken off and confused in the vials with the legs of several other species, but they are probably uniform dark brown. Wings with the costa and the subcosta conspicuously bright sulphur-yellow, remaining veins brown; wing suffused with brown and variegated in places with hyaline, as in cell R_1 which completely lacks a stigma, in cell R , 1st M_2 and elsewhere. Venation as in figure 3.

Abdominal tergites brown, broadly edged with yellow on the caudo-lateral margins, the brown always continuing to the caudal margin as a narrow median line except in the 8th tergite where the lateral and caudal margin is broadly yellow all around; sternites brown, very narrowly edged with paler on the caudal margin; pleurites broadly and conspicuously yellowish. Hypopygium with the 9th tergite short, broadly concave, yellow. Pleurites rather short, cylindrical, yellow, clothed with long pale hairs, bearing at the tip two appendages; the dorsal appendage is entirely fleshy with two arms, the one directed caudad, the other cephalad, the caudal arm densely clothed with abundant pale hairs, the cephalic arm with a chitinized bristle at the tip and about four smaller bristles on either side, subequal in length and evenly spaced. The ventral appendage is a long simple curved hook, very strongly chitinized. The 9th sternite is very high, convex and bears at its tip two strongly chitinized forked appendages that are directed caudad, the outer fork being cylindrical, acute, the inner fork flattened, twisted and directed entad. The penis-guard viewed from above (fig. 9) is narrow at the base, broadening toward the tip, the lateral edges chitinized and

passing into two sharp chitinized points; viewed from the side (fig. 10) these sharp tips are directed strongly ventrad and viewed from beneath (fig. 12) they are seen to be decussate. Gonapophyses short, directed dorsad at the tip which is blunt and truncated.

Female: Similar to the male but the head of one specimen is entirely dark, the dorsal brown stripe on the pleuræ clearer and narrower not grading insensibly into the yellow of the dorsal pleurites.

Holotype, ♂, Nadi, Fiji Is., 7-28, '13. Allotype, ♀, and paratype, ♀, with the type.

Gonomyia (Gonomyia) varipes, sp. n.

Head yellow with a brown vertical spot; thoracic dorsum brown; legs banded brown and white; wings with the costal margin conspicuously bright yellow.

Female, length, 4.6 mm.; wing, 3.6 mm.

Female: Rostrum and palpi brown. Antennæ with the two basal segments light yellow above, brown on the under surface; the two or three basal flagellar segments are yellowish, the remainder brown. Head light yellow, a narrow transverse brown mark across the front behind the antennæ and a V-shaped brown mark on the vertex with its point directed cephalad.

Pronotum light brown except the scutellum which is very light yellow, a continuation of the dorsal pleural stripe. Mesonotal praescutum very dark clove-brown, uniform; scutum similar except the median portion and the outer caudal angles of the lobes which are paler; scutellum brown, the apical two-thirds pale; mesonotum light brown. Pleuræ and sterna brown except a broad yellow line extending from the wing-root along the dorsal pleurites to the pronotum and a second broad whitish yellow stripe extending from the fore coxæ, above the middle coxæ to underneath the halteres. Halteres uniform light sulphur yellow. Legs,—fore legs, coxæ light yellow at the base, the tip brown; trochanters brown; femora brown; tibiæ, extreme base and apical two-fifths brown, the remainder china-white; metatarsus with the basal half white, remainder of the tarsi brown. One other leg is loose in the vial and belongs to either the middle or hind legs,—here the base of the femur is yellowish passing into brown at the tip; the tibiæ all white except the very narrow base and slightly broader apex which are brown and the metatarsus is white except the tip which is broadly brown; remaining tarsal segments brown. Wings, costa very conspicuously pale sulphur-yellow, remaining veins brown; wing-membrane with a light brown suffusion; cell R_1 paler and containing the oval brown stigma. Venation as shown in figure 4.

Abdominal tergites and sternites dark brown, the pleural region paler.

Holotype, ♀, Nadi, Fiji Is., 7-28, '13.

Erioptera (Erioptera) oceanica, sp. n.

Halteres dark at tip; wings light brown; male hypopygium with the pleura bearing a chitinized knob at tip.

Male, length, 6.3 mm.; wing, 5.4 mm.

Male: Rostrum and palpi brownish yellow. Antennæ rather long, the flagellar segments rather elongate-oval; if bent backward the organ would extend beyond the wing-base; scape brown, the flagellar segments a little paler. Head dark brown and sparsely hairy.

Pronotum brown, clothed with brown hairs. Mesonotal praescutum light brownish yellow without apparent stripes but with a row of hairs on either side of the middle line; scutum, scutellum and postnotum brownish yellow, the latter with a narrow brown median line. Pleuræ light brownish yellow. Halteres rather long, pale, the knob dark. Legs pale yellow with the two apical tarsal segments brown. Wings with a pale brown tinge, the costal region a little more yellowish; veins brown. Venation as in figure 5.

Abdomen long and slender, pale yellow, the seventh sternite brown. Hypopygium with the pleurites very long and slender, densely clothed with long yellow hairs; at the tip of the pleurite are two appendages, the one a dorsal chitinized appendage, slender at the base, swollen at the tip and slightly roughened apically, and a ventral, flattened fleshy lobe that is rather truncate at the tip. (See fig. 13).

Holotype, ♂, Nadi, Eiji Is., 7-28, '13. Paratype, ♂, with the type.

Mongoma fijiensis, sp. n.

Trentepohlii group; wings subhyaline, indistinctly if at all marked; legs without white bands.

Male, length, 6.8 mm.; wing, 5.5-5.6 mm.

Female, length, 8-8.6 mm.; wing, 6.4-6.6 mm.

Male and female: Rostrum and palpi yellowish. Antennæ with the basal segments pale yellow, the flagellar segments brownish. Head dark brown. Neck elongate, brown dorsally, yellow beneath. Mesonotal praescutum light yellow with three elongate brown stripes, the median one broadest in front, narrowed behind and ending at the transverse suture; the lateral stripes are narrower, beginning just back of the pseudosutural foveæ and continue back to the scutum where they suffuse the lobes. Scutum yellow, except the central portions of the lobes which are brown; scutellum and postnotum dark brown except a narrow margin of yellowish. Pleuræ light yellow, the sterna a little suffused with brown. Halteres rather short, pale yellow. Legs, coxæ and trochanters pale yellow, femora, tibiæ and the first tarsal segment brown, the remainder of the legs broken off. Wings with a pale yellow suffusion; veins light brown; stigma rather pale; indications of slightly darker seams along the cord. Venation: (See figure 6). Fusion of 1st A and Cu₂ slight.

Abdominal tergites dark brown medially, this mark in the shape of a long triangle with its point directed cephalad; sternites pale yellow.

Holotype, ♂, Nadi, Fiji Is., 7-28, '13.

Allotype, ♀, and paratype, ♀, with the type.

Mongoma, sp.

A species belonging to the *fragillima* and *australasiae* group in the Macleay collection mentioned by Skuse (Dipt. Aust., vol. 4, series second; Proc. Linn. Soc. N. S. W., Sept. 25, 1889; p. 832, 833.)

Conosia irrorata, Wiedemann.

Sixteen females taken at a lamp at Nadi, Fiji Islands, July 28, 1913. This series shows a great difference in size in the different individuals. It was previously recorded from these islands by Skuse who noted a specimen in the Macleay collection. (l. c., p. 837, 838). The reason that this entire series consisted of females is undoubtedly due to the nocturnal oviposition in this species. Series of photophilous craneflies always show a preponderance of the female sex and many of these are gravid specimens ready to deposit their eggs, the others having laid the clutch earlier in the evening. When males occur at lamps or in trap-lanterns it is probable that copulation takes place in the twilight or early evening.

EXPLANATION OF THE PLATES.

PLATE XXXIV.

- Fig. 1. Wing of *Dicranomyia illingworthi*, sp. n.
 Fig. 2. Wing of *Teucholabis fijiensis*, sp. n.
 Fig. 3. Wing of *Gonomyia (Leiponeura) fijiensis*, sp. n.
 Fig. 4. Wing of *Gonomyia (Gonomyia) varipes*, sp. n.
 Fig. 5. Wing of *Erioptera (Erioptera) oceanica*, sp. n.
 Fig. 6. Wing of *Mongoma fijiensis*, sp. n.

PLATE XXXV.

- Fig. 7. Hypopygium of *Dicranomyia illingworthi*; dorsal aspect of the pleurite.
 Fig. 8. Hypopygium of *Teucholabis fijiensis*; dorsal aspect of the pleurite.
 Fig. 9. Hypopygium of *Gonomyia (Leiponeura) fijiensis*; dorsal aspect. d—dorsal appendage; v—ventral appendage; p—penis-guard.
 Fig. 10. Hypopygium of *Gonomyia (Leiponeura) fijiensis*; lateral aspect. p—penis-guard; pl—pleurite; s—9th sternite.
 Fig. 11. Hypopygium of *Gonomyia (Leiponeura) fijiensis*; ventral aspect of the 9th sternite.
 Fig. 12. Hypopygium of *Gonomyia (Leiponeura) fijiensis*; ventral aspect of the penis-guard.
 Fig. 13. Hypopygium of *Erioptera (Erioptera) oceanica*; pleurite, lateral aspect. d—dorsal appendage; v—ventral appendage.